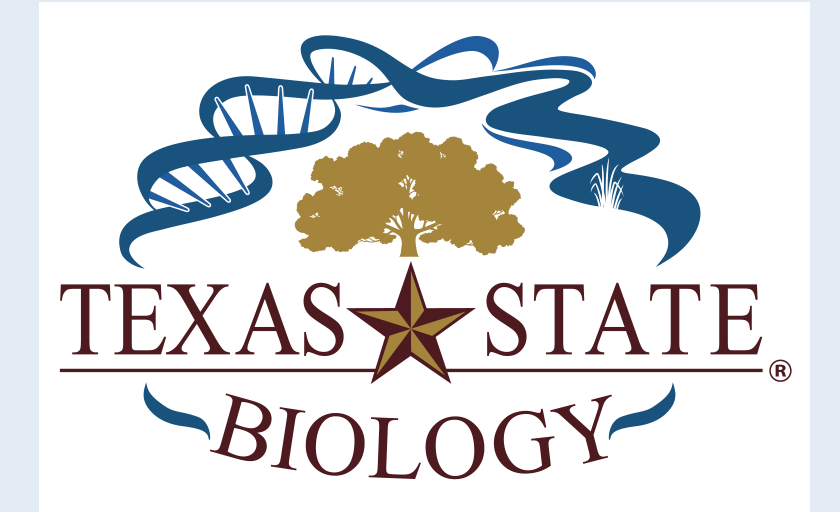


Performance on student learning outcomes and perceptions about biology as predictors of student retention in the biology major

Andrea S. Aspbury

Texas State University, San Marcos, TX



Background

- Student-learning outcomes (SLO) are often used to gauge student mastery of concepts during individual courses, but it is unclear if these are predictors of student success or retention in the major.
- Students' novice-to-expert-like perceptions about STEM disciplines can also affect their success not just in a class, but also across their degree program.
- Students are expected to progress from more "novice" like perceptions to more "expert" like perceptions as they progress through their courses.

Questions

- (1) Do student perceptions about biology at the beginning of their Introductory Biology course affect their performance on student learning outcomes
- (2) Does student performance on student learning outcomes affect their progression to more expert-like perceptions about biology by the end of the course?

Methods

- Students (N = 175 per semester; 2 semesters) from the BIO 1331 (Organismal Biology) course have been given the CLASS-BIO survey (Semsar et al. 2011) at the beginning and at the end of each semester.
 - 38 statements to which students respond using a 5-point Likert scale.
 - Overall score for pre and post course is measured as the average percentage of statements to which the students as an expert biologist would.
- Data on student success on SLO (N = 60) is being collected for all students based on performance on graded assessments administered via MasteringBiology®
 - Each SLO has multiple assessment items associated with it.

Literature Cited

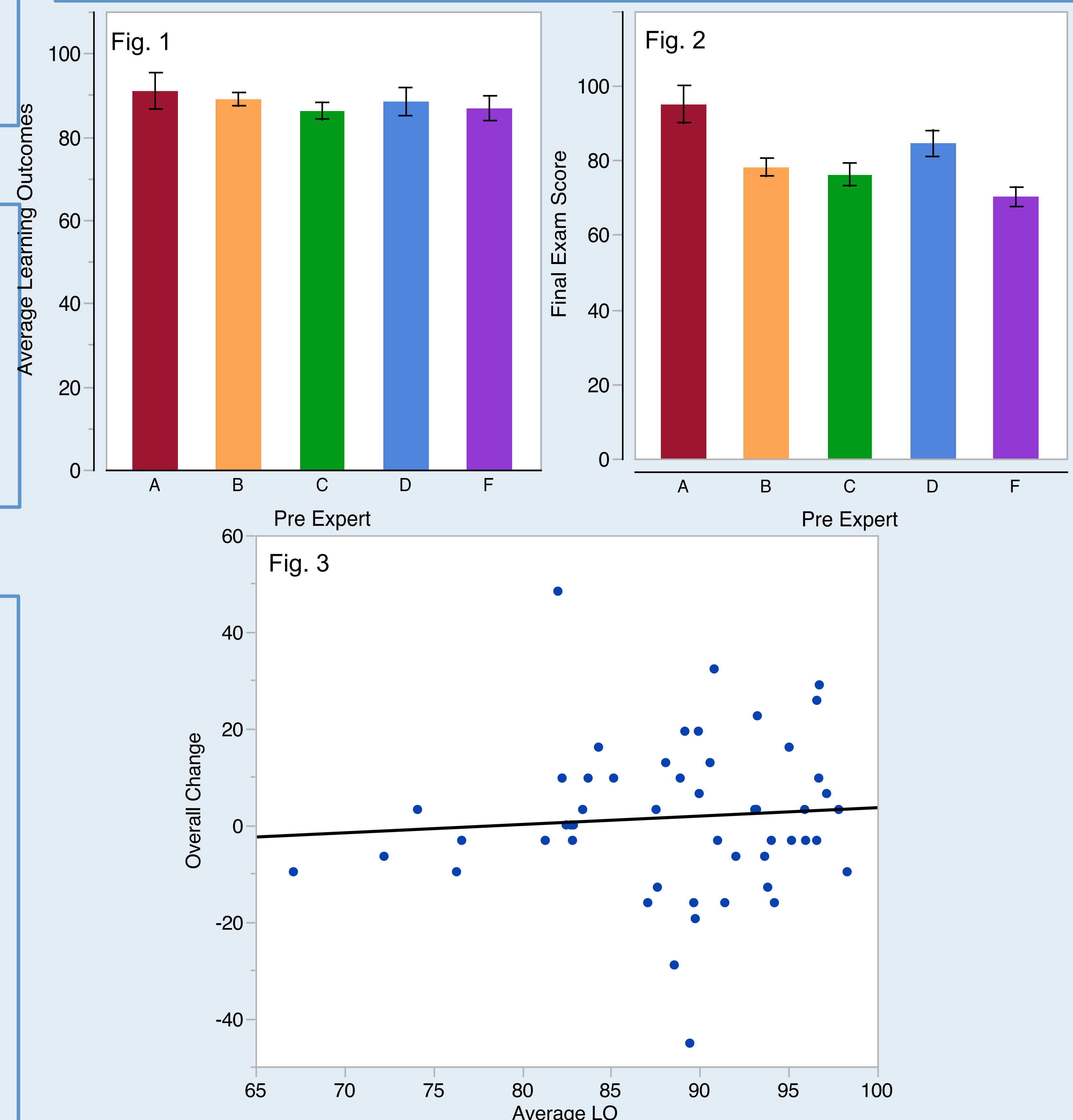
Semsar, K., J.K. Knight, G. Birol, M.K. Smith. 2011. The Colorado Learning Attitudes about Science Survey (CLASS) for Use in Biology. CBE Life Sci Educ 10: 268-278.

Preliminary Findings

Pre-course Expert level "grades" do not affect student success on MasteringBiology Learning Outcomes (ANOVA: $P > 0.05$) (FIG 1)

Pre-course Expert level "grades" do affect student success on Final Exam (ANOVA: $F_{4,42} = 5.85$, $P = 0.001$) (FIG 2), as does performance on Learning Outcomes (ANOVA: $F_{1,42} = 6.65$, $P = 0.015$)

No effect of Learning Outcome success on improvement in Expert level "grades" (Linear Regression: $P > 0.05$) (FIG 3)



Conclusions

- (1) Student perceptions about biology at the beginning of their Introductory Biology course affect their performance in the course overall, but not on LO.
- (2) Student performance on student learning outcomes does not seem to affect their progression to more expert-like perceptions about biology by the end of the course.